Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application.

1-9. (Canceled)

10. (Currently amended) The ~~industrial controller~~distributed control system of claim ~~9~~31, wherein the first or second real time control program~~second program portion~~ provides a thread to the first or second agent application, respectively,~~first program portion~~ whenever the first or second real time control program~~second program portion~~ modifies the respective data table~~values~~, in order to notify the first or second agent application, respectively,~~first program portion~~ that the modifications have occurred.

11-16. (Cancelled)

17. (Currently amended) The distributed control system of claim ~~1~~631, wherein each of the ~~second and fourth program portions~~first and second real time control programs is written in ladder logic.

18. (Currently amended) The distributed control system of claim ~~1~~631, wherein each of the ~~first and third program portions~~first and second agent applications is capable of generating and processing messages written in a language selected from the group consisting of Job Definition Language (JDL), Knowledge Query and Manipulation Language (KQML), and EXtensible Markup Language (XML).

19. (Currently amended) The distributed control system of claim 18, wherein the messages generated and processed by the ~~first industrial controller and the third industrial controller~~first and second agent applications are wrapped in Foundation for Intelligent Physical Agents (FIPA) Agent Communication Language (ACL) information.

20. (Currently amended) The distributed control system of claim ~~16~~31, further comprising a means for communicating with a third industrial controller of an external organization, wherein the third industrial controller includes a third processing component, wherein the third processing component is configured to ~~perform a fifth program portion governing agent type behavior~~execute a third agent application.

21. (Currently amended) The distributed control system of claim ~~16~~31, wherein the first ~~program portion~~agent application includes at least one of a planner portion, an execution controller portion, a diagnostics portion, an equipment model portion, an application-specific agent scripts portion and a generic interface portion.

22. (Currently amended) The distributed control system of claim ~~16~~31, wherein the first and second ~~agent type behavior includes~~agent applications are configured to conduct ~~conducting~~ negotiations with other agents.

23. (Currently amended) The distributed control system of claim ~~16~~31, wherein first communications between the ~~second program portion~~first real time control program and the first device also occur by way of the first data table, and second communications between the ~~fourth program portion~~second real time control program and the second device also occur by way of the second data table.

24-30. (Canceled)

31. (New) A distributed control system for controlling a distributed process performed by a plurality of devices, the distributed control system comprising:

a first industrial controller including a first processing component and associated with at least a first device;

a first memory device in communication with the first processing component and configured to store a first data table;

at least one input module in communication with the first industrial controller and receiving an input signal from at least one sensor;

at least one output module in communication with the first industrial controller and sending an output signal to at least one actuator;

a first agent application executing on the first processing component;

a first real time control program executing on the first processing component to selectively enable and disable one of the output signals in response to one of the input signals wherein the first agent application and the first real time control program each access the first data table for both reading and writing information relating to the control or status of at least the first device;

a second industrial controller including a second processing component and associated with at least a second device;

a network connecting the first and second industrial controllers to communicate between the first and second industrial controllers;

a second memory device in communication with the second processing component and configured to store a second data table;

at least one input module in communication with the second industrial controller and receiving an input signal from at least one sensor;

at least one output module in communication with the second industrial controller and sending an output signal to at least one actuator;

a second agent application executing on the second processing component; and

a second real time control program executing on the second processing component to selectively enable and disable one of the output signals in response to one of the input signals wherein the second agent application and the second real time control program each access the second data table for both reading and writing information relating to the control or status of at least the second device.

32. (New) The distributed control system of claim 20, wherein the first agent application performs at least one of the following actions in response to reading information from the data table that was written to the data table by the first real time control program:

writes at least one of an additional piece of data and an additional event to the data table to cause a change in operation of the first real time control program; and

communicates with at least one of the second or third agent applications to cause a change in operation of the other agent application.